

Appl. No. : 10/705,748
Filed : November 10, 2003

REMARKS

The foregoing amendments and the following remarks are responsive to the Office Action. Claims 1-24 and 27-29 were pending in this application. Claims 1, 3-5, 7, 8, 10-16, 19, 21-23 and 27-29 are amended herein. Claims 30-40 are added herein. Accordingly, Claims 1-24 and 27-40 are presented for further consideration.

Discussion of Example Mold Assemblies

In some embodiments of the subject application, the Applicants disclose mold assemblies which include a combination of hardened material components and high heat transfer material components. Such a combination can provide advantageous wear characteristics at the mold mating and other friction surfaces, while simultaneously providing relatively rapid cooling of an injected item (e.g., preform) to reduce the duration of an injection and cooling cycle.

The use of hardened materials at mold contact surfaces can help prevent or inhibit wear, generally extending the life of a mold assembly. However, such hardened materials typically have relatively poor heat transfer properties. Thus, it may be difficult to cool segments of a preform (or other moldable item) which are positioned adjacent to a hardened material. This may undesirably reduce molding cycle time. In order to improve heat transfer near these hardened materials, the mold cavity and/or core portions can include high heat transfer materials adjacent or in proximity to the mold portions comprising hardened materials.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejects Claims 1, 2, 5, 6 and 9-24 under 35 U.S.C. Section 102(b) as being anticipated by PCT Publication No. WO/2000/062998 ("the '998 publication"). Applicants disagree with the Examiner's characterization of the '998 publication, and Applicants respectfully traverse the rejections of these claims. However, Claims 1, 2, 5, 10-16, 19 and 21-23 are amended herein to clarify the distinctions between the claims and the '998 publication and to expedite allowance of the application.

PCT Publication No. WO/2000/062998

The '998 publication discloses a mold having a mold mandrel 298 and an associated cavity 300. The cavity includes a gate area 306 near the gate 308. An insert 310 of a material with especially high heat transfer properties is disposed at the gate area of the cavity. As discussed in the specification of the '998 publication, the void space of the mold cavity near the gate area generally receives the last portion of melt stream to be injected into the mold cavity. Thus, this portion is the last to begin cooling. Consequently, it is advantageous to enhance the cooling in the gate area of the mold cavity, especially if a subsequent overmolding or barrier layer is injected over the original melt. As disclosed in the '998 publication, the tips of the mandrel 298 can also comprise a high heat transfer material to further enhance the cooling of the last portion of melt stream injected into the mold cavity. These concepts are illustrated in Figure 26 of the '998 publication reproduced below. The '998 publication fails to disclose a mold assembly having both a hardened material to inhibit wear resistance between contacting mold surfaces and a high heat transfer material.

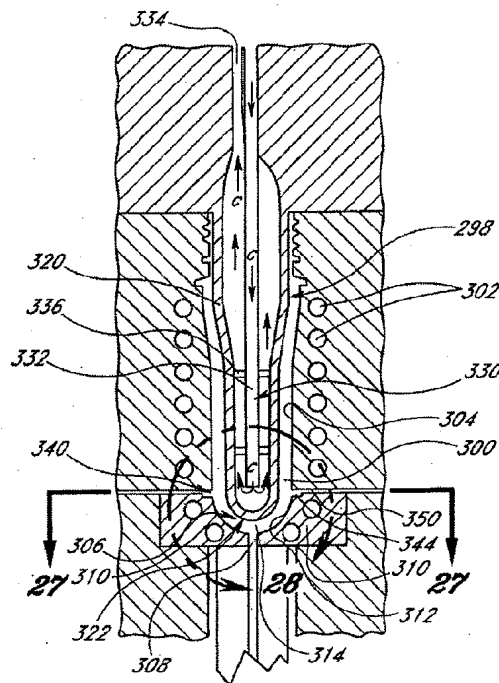


FIG. 26

Appl. No. : 10/705,748
Filed : November 10, 2003

Claim 1

Amended Claim 1 recites an injection mold assembly comprising:

a cavity section having a first portion, a gate portion and a second portion positioned between the first portion and the gate portion, the first portion comprising a hardened material that defines a cavity contact surface, and the second portion comprising a high heat transfer material and at least partially defining a cavity mold surface;

a core section having at least a core contact surface and a core mold surface, a portion of the core section forming the core contact surface comprising a hardened material; and

a mold cavity having a distal and a proximal end and formed between the cavity section and the core section when a portion of the cavity contact surface and a portion of the core contact surface are in contact, the distal end of the mold cavity formed by the gate portion of the cavity section.

Applicants respectfully submit that the '998 publication does not teach or suggest all the limitations of amended Claim 1. For example, the '998 publication does not teach or suggest a cavity section having a first portion comprising a hardened material that defines a cavity contact surface and a second portion positioned between the first portion and a gate portion, wherein the second portion comprises a high heat transfer material. Further, the '998 publication does not teach or suggest a core section having a core contact surface, wherein a portion of the core section forming the core contact surface comprises a hardened material. Accordingly, amended Claim 1 is patentably distinguished over the '998 publication. Applicants respectfully request the Examiner to withdraw the rejection of Claim 1 based on the '998 publication.

Claim 10

Amended Claim 10 recites an injection mold assembly comprising:

a mold cavity having an internal surface and an external surface, the external surface having a region configured to surround a gate;

a core section comprising a core member and a core holder, the core holder holding the core member, and the core member defining at least a portion of the internal surface of the mold cavity;

a cavity section comprising an upper hardened portion and a gate portion, the upper hardened portion forming a lower contact surface and comprising a hardened material, and the gate portion comprising a high heat transfer material forming the region of the external surface surrounding the gate, each of the upper

Appl. No. : 10/705,748
Filed : November 10, 2003

hardened portion and the gate portion at least partially defining the external surface of the mold cavity.

Applicants respectfully submit that the '998 publication does not teach or suggest all the limitations of amended Claim 10. For example, the '998 publication does not teach or suggest a core section comprising a core member and a core holder, wherein the core holder holds the core member. Further, the '998 publication does not teach or suggest a cavity section comprising an upper hardened portion which forms a lower contact surface and comprises a hardened material. Accordingly, amended Claim 10 is patentably distinguished over the '998 publication. Applicants respectfully request the Examiner to withdraw the rejection of Claim 10 based on the '998 publication.

Claim 22

Amended Claim 22 recites a preform mold assembly comprising:

a core section having a core contact surface formed of a hardened material;
and

a cavity section comprising an upper portion, a gate portion and an intermediate portion positioned between the upper portion and the gate portion, the upper portion comprising a hardened material and having an upper contact surface configured to mate and contact the core contact surface, and the gate portion and the intermediate portion comprising a high heat transfer material.

Applicants respectfully submit that the '998 publication does not teach or suggest all the limitations of amended Claim 22. For example, the '998 publication does not teach or suggest a core section having a core contact surface formed of a hardened material. Further, the '998 publication does not teach or suggest a cavity section having an upper portion which comprises a hardened material and an intermediate portion which comprises a high heat transfer material. Accordingly, amended Claim 22 is patentably distinguished over the '998 publication. Applicants respectfully request the Examiner to withdraw the rejection of Claim 22 based on the '998 publication.

Claims 2-9 depend from Claim 1 and further define the invention defined in Claim 1. Claims 11-21 depend from Claim 10 and further define the invention defined in Claim 10. Claims 23 and 24 depend from Claim 22 and further define the invention defined in Claim 22.

Appl. No. : 10/705,748
Filed : November 10, 2003

Thus, for at least the reasons set forth above with respect to Claims 1, 10 and 22, Applicants respectfully submit that Claims 2-9, 11-21, 23 and 24 are patentably distinguished over the '998 publication. Further, Claims 2-9, 11-21, 23 and 24 are distinguished over the '998 publication in view of the additional limitations defined in each of the claims. Therefore, Applicants respectfully request the Examiner to withdraw the rejection of Claims 1, 2, 4-6 and 9-24.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejects Claim 4 under 35 U.S.C. Section 103(a) as unpatentable over the '998 publication. Moreover, the Examiner rejects Claims 27-29 under 35 U.S.C. Section 103(a) as unpatentable over the '998 publication in view of the Mold Making Handbook. As discussed in greater detail below, Applicants disagree with the Examiner's obviousness conclusion regarding Claims 4 and 27-29, and Applicants respectfully traverse the rejections of these claims. However, Claims 4 and 27-29 are amended herein to clarify the distinctions between the claims and the cited prior art and to expedite allowance of the application.

A *prima facie* rejection for obviousness requires: (1) a disclosure or suggestion of every element of the claim in the cited reference or references; (2) a suggestion or motivation, in the references or known to one skilled in the art, to modify or combine the references; and (3) a reasonable expectation of success. The suggestion to combine and the reasonable expectation of success must be found in the cited references. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 4

Claim 4 stands rejected under 35 U.S.C. Section 103(a) as unpatentable over the '998 publication in view of what would have been obvious to one having ordinary skill in the art. The Examiner relies on what would have been obvious to a skilled artisan for the disclosure of a beryllium coated material with hardened steel. Because amended Claim 4 depends from amended Claim 1 and the '998 publication does not teach or suggest every limitation of amended Claim 1, as discussed above, the combination of the '998 publication and what would have been obvious to a skilled artisan does not teach or suggest every limitation of amended Claim 4.

Appl. No. : 10/705,748
Filed : November 10, 2003

Accordingly, amended Claim 4 is not obvious over the cited combination for at least this reason. Applicants respectfully request the Examiner to withdraw the rejection of Claim 4.

Claims 27 and 28

Amended Claim 27 recites an injection mold assembly, comprising:

- a lower portion;
- an upper portion;
- a mold cavity formed when a mating surface of the lower portion contacts an adjacent mating surface of the upper portion, the mold cavity having a distal end and a proximal end;
- means for mating the lower portion and the upper portion; and
- means for transferring heat at a first rate from the distal end of the mold cavity and a second rate from the proximal end of the mold cavity;
- wherein the mating surface of the lower portion comprises a hardened material; and
- wherein the first rate of transferring heat is greater than the second rate of transferring heat.

Applicants respectfully submit that the combination of the '998 publication and the Mold Making Handbook does not teach or suggest all the limitations of amended Claim 27. For example, the combination does not teach or suggest a mating surface of the lower portion comprising a hardened material. Accordingly, amended Claim 22 is patentably distinguished over the combination of the '998 publication and the Mold Making Handbook.

Claim 28 depends from Claim 27 and further defines the invention defined in Claim 27. Thus, for at least the reasons set forth above with respect to Claim 27, Applicants respectfully submit that amended Claim 28 is patentably distinguished over the combination of the '998 publication and the Mold Making Handbook. Further, Claim 28 is patentably distinguished over the combination in view of the additional limitations defined in the claim. Therefore, Applicants respectfully request the Examiner to withdraw the rejection of Claims 27 and 28.

Claim 29

Amended Claim 29 recites an injection mold assembly comprising a contact portion, the contact portion comprising:

Appl. No. : 10/705,748
Filed : November 10, 2003

an upper portion comprising a wear resistant material adapted to contact and mate with a core section of the mold assembly; and

a lower portion comprising a wear resistant material adapted to connect with a cavity section of the mold assembly; and

an insert positioned between the upper portion and the lower portion, the insert comprising a high heat transfer material and defining a cavity mold surface.

Applicants respectfully submit that the combination of the '998 publication and the Mold Making Handbook does not teach or suggest all the limitations of amended Claim 29. For example, the combination does not teach or suggest a contact portion having an upper portion which comprises a wear resistant material adapted to contact and mate with a core section of a mold assembly. Further, the combination does not teach or suggest a contact portion having a lower portion which comprises a wear resistant material adapted to connect with a cavity section of a mold assembly. In addition, the combination does not teach or suggest an insert, positioned between the upper portion and the lower portion, which comprises a high heat transfer material and defines a cavity mold surface. Accordingly, amended Claim 29 is patentably distinguished over the combination of the '998 publication and the Mold Making Handbook. Applicants respectfully request the Examiner to withdraw the rejection of Claim 29.

New Claims

Applicants have added new Claims 30-40 to further define the invention disclosed in this application. No new matter is added by these new claims nor by the amendments to the pending claims.

Obligation under 37 C.F.R. 1.56

Applicants thank the Examiner of the reminder regarding the obligation under 37 C.F.R. 1.56 to point out the inventor and invention dates of each claims that was not commonly owned at the time a later invention was made. Applicants submit that the subject matter of the various claims submitted with respect to this application was commonly owned at the time the inventions covered by this application were made.

Appl. No. : 10/705,748
Filed : November 10, 2003

SUMMARY

Applicants respectfully submit that the claims are in condition for allowance. Furthermore, any remarks in support of patentability of one claim should not be imputed to any other claim, even if similar terminology is used. Any remarks referring to only a portion of a claim should not be understood to base patentability on that portion; rather, patentability must rest on each claim taken as a whole. Applicants respectfully traverse each of the Examiner's objections and rejections and each of the Examiner's assertions regarding what the prior art shows or teaches, even if not expressly discussed herein. Although changes to the claims have been made, no acquiescence or estoppel is or should be implied thereby; such amendments are made only to expedite prosecution of the present application and are without prejudice to the presentation or assertion, in the future, of claims relating to the same or similar subject matter.

Applicants respectfully request that a Notice of Allowance be issued at the earliest opportunity

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 12 April 2007

By: Karoline A. Delaney

Karoline A. Delaney
Registration No. 44,058
Attorney of Record
Customer No. 20,995
(949) 760-0404

3641597
041207